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JC808 U.S. PTO

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**UTILITY
PATENT APPLICATION
TRANSMITTAL**

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

0557-4983-2

First Inventor or Application Identifier

TAKAFUMI HOSHIZAWA

Title

**SYSTEM AND METHOD FOR KEEPING CONSUMABLE ITEM IN AN IMAGE
FORMING APPARATUS****APPLICATION ELEMENTS**

See MPEP chapter 600 concerning utility patent application contents

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
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1. ☒ **Fee Transmittal Form (e.g. PTO/SB/17)**
(Submit an original and a duplicate for fee processing)
2. ☒ **Specification** **Total Pages** **12**
3. ☒ **Drawing(s) (35 U.S.C. 113) Total Sheets** **3**
4. ☒ **Oath or Declaration** **Total Pages** **4**
- a. ☒ **Newly executed (original or copy)**
- b. ☐ **Copy from a prior application (37 C.F.R. §1.63(d))**
(for continuation/divisional with box 15 completed)
- i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named
in the prior application, see 37 C.F.R. §1.63(d)(2) and
1.33(b)
5. ☐ **Incorporation By Reference (usable if box 4B is checked)**
The entire disclosure of the prior application, from which a copy of the
oath or declaration is supplied under Box 4B, is considered to be part
of the disclosure of the accompanying application and is hereby
incorporated by reference therein.

ACCOMPANYING APPLICATION PARTS

6. ☒ **Assignment Papers (cover sheet & document(s))**
7. ☐ **37 C.F.R. §3.73(b) Statement** ☐ **Power of Attorney**
(when there is an assignee)
8. ☐ **English Translation Document (if applicable)**
9. ☐ **Information Disclosure Statement (IDS)/PTO-1449** ☐ **Copies of IDS Citations**
10. ☐ **Preliminary Amendment**
11. ☒ **White Advance Serial No. Postcard**
12. ☐ **Small Entity Statement(s)** ☐ **Statement filed in prior application. Status still proper and desired.**
13. ☒ **Certified Copy of Priority Document(s) (1)**
(if foreign priority is claimed)
14. ☒ **Other:** **REQUEST FOR PRIORITY**

15. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below:

- ☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application no.:
Prior application information: Examiner: Group Art Unit:

16. Amend the specification by inserting before the first line the sentence:

- ☐ This application is a ☐ Continuation ☐ Division ☐ Continuation-in-part (CIP)
of application Serial No. Filed on
- ☐ This application claims priority of provisional application Serial No. Filed

17. CORRESPONDENCE ADDRESS**22850**

(703) 413-3000

FACSIMILE: (703) 413-2220

Name:	Gregory J. Maier	Registration No.:	25,599
Signature:		Date:	7-18-00
Name:	Eckhardt H. Kuesters	Registration No.:	28,870

TITLE OF THE INVENTION

SYSTEM AND METHOD FOR KEEPING CONSUMABLE ITEMS IN AN IMAGE FORMING APPARATUS

CROSS REFERENCE TO RELATED APPLICATIONS

5 This application claims priority under 35 USC §119 to Japanese Patent Application No. 11-204774 filed on July 19, 1999, the entire contents of which are incorporating reference herein.

BACKGROUND OF THE INVENTION

Field of the invention

10 The present invention relates in general to a system and method for keeping consumable items, such as sheets and toner in an image forming apparatus, such as a copier, a facsimile and a printer.

Discussion of the Background

15 A conventional image forming apparatus generally stops its operation when running low on a consumable item when the consumable item is not promptly replenished. In a modern automated office, the business of the office can considerably be influenced when an image forming apparatus is even briefly out of operation. Then, to promptly replenish consumable items, the Japanese Patent Application Laid Open Number 11-3005 proposes a copier kept supplied with consumable items by providing the copier with a communication
20 function and connecting the copier with a host computer via a communication circuit. In fact, it is indeed possible to constitute a system for keeping consumable items by using the above-mentioned copier having a communication function.

25 However, it is impossible to constitute a system capable of executing inventory control of consumable items at a user side if no communication function is provided. In that case, the image forming apparatus does not operate in the case when its display indicates a shortage of a consumable item and the consumable item is not replenished.

 Further, a working down time is continued until consumable items are delivered after a user has ordered replenishment.

SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a novel consumable item keeping method and system in which supply of consumable items are maintained and down time due to consumable item depletion is reduced. To that end, the present invention

5 provides a consumable item keeping method and system wherein a consumable item keeping apparatus stores a variety of consumable items at a user side, a consumable item supplying section is connected to the consumable item keeping apparatus via a communication device and supplies a variety of consumable items to a user upon request, a consumable item replenishment level setting device sets a consumable item replenishment level for the

10 consumable item keeping apparatus, a consumable item replenishment signal generating device generates a signal indicative of arrival of the consumable items at the consumable item replenishment level, and a consumable item order data transmitting device transmits via the communication circuit order data indicating a request for consumable items to be replenished to the consumable item supplying section, when the consumable item replenishment signal is

15 generated.

According to the present invention, a user can optionally set a consumable item replenishment level.

Further according to the present invention, a kind of the consumable items arriving at the consumable item replenishment level is detected and its data is included in the order data.

20 Further according to the present invention, the order data is transmitted only when said signal is continuously sensed for a prescribed time period.

Further according to the present invention, the order data is reset when the signal disappears before a prescribed time period has elapsed.

25 Further according to the present invention, a data-receiving device configured to receive the order data transmitted from the order data transmitting device is provided in the consumable item supplying section.

30 Further according to the present invention, a determining device configured to determine both a kind and a amount of consumable items to be distributed from the consumable item supplying section to a user according to the order data is provided in the consumable item supplying section.

Further according to the present invention, a delivery data transmitting device

configured to transmit delivery data of the consumable item to be distributed is provided in the consumable item supplying section.

Further according to the present invention, the delivery data includes information of a day when consumable item distribution is commenced by the consumable item supplying section.

Further according to the present invention, the delivery data includes information of a day when consumable item is scheduled to be delivered to a user.

Further according to the present invention, the consumable item is used in an image forming apparatus installed in a user side.

Further according to the present invention, the communication circuit includes a wireless system.

Further according to the present invention, the inventory-detecting device is employable regardless of a model and manufacturer of the image forming apparatus.

Further according to the present invention, the delivery data is displayed on a display at the user side.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the present invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by the following detailed description when considered in connection with the accompanying drawings, wherein:

Fig. 1 is a schematic block diagram illustrating a consumable item keeping system of one embodiment of the present invention;

Fig. 2 is a flowchart illustrating one example of an operational procedure for dealing consumable item order data;

Fig. 3 is a diagram illustrating one example of contents of consumable item order data; and

Fig. 4 is a diagram illustrating one example of contents of delivery data transmitted from a consumable item-supplying center.

DESCRIPTION of THE PREFERRED EMBODIMENTS

Referring now to the drawing, wherein like reference numerals designate identical or corresponding parts throughout several views, and more particularly to Fig. 1 thereof, Fig. 1 is a schematic block diagram illustrating a consumable item keeping system according to one embodiment of the present invention. The consumable item keeping system includes a consumable item keeping apparatus 10, a communication circuit 30, a consumable item supplying section 80, a plurality of consumable item replenishment level detecting sensors S1 and S2, a plurality of (sheet) size detecting sensors S3 and S4, and stacks of different sized sheets, such as A4 and A3 standard sheets. A side guide plate 12, a display 14, and a CPU (Central Processing Unit) 16 are also included.

Further, a MODEM (Modulation/Demodulation) M1, a PSU (Power Supply Unit) 18, and an AC (power supply) 20 are also included. The consumable item replenishment level detecting sensors S1 and S2 can be photo-sensors (a distance detecting type and a reflection detecting type or the like), pressure sensors, or micro-switches or the like.

The consumable item replenishment level, e.g., a position of the sensor, can be preset at a prescribed value when a consumable item keeping apparatus is initially installed. A user can adjust the position of the sensor, so that a level of replenishment can be adjusted corresponding to intent of the user. Accordingly, as consumable items reach a consumable item replenishment level, namely a remaining amount decreases to a prescribed level, a signal indicative of replenishment of consumable items is generated and transmitted to the CPU 16.

Sheet size detecting sensors S3 and S4 may also be photo-sensors (a distance-detecting type and a reflection-detecting type or the like). The sheet size detecting sensors S3 and S4 may detect the width of consumable items at a position where the side guide plate 12 is attached, and may transmit size data to the CPU 16. A user can move and adjust the side guide plate 12 at a prescribed position to match it with the width of the consumable items. Thus, the side guide plate 12 may function to secure the consumable item at a prescribed position. The display 14 may display consumable item ordering day and time, and delivery day and time, so that the user can use the information when confirming a delivery status. A liquid crystal type display panel can be utilized as the display 14.

The CPU 16 may monitor both inventory state data and order/delivery data. As a monitoring operation, the CPU 16 may determine that consumable item is required and

transmit consumable item order data to M1, when continuously receiving a consumable item replenishment signal for a prescribed detection time period from one of the sensors S1 and S2. A user can optionally set such a detecting time period. At that time, the CPU 16 may detect size data and an ordering amount of the consumable item sent from the sensors S3 and S4.

Since types of consumable item may be related to the sensors S1 and S2, the type of the consumable item to be replenished can be determined based on the consumable item replenishment signal sent from the sensors S1 and S2. The CPU 16 may generate a user list with user code. To monitor order/delivery data, both order data and delivery data are monitored and displayed on the display 14. The MODEM (Modulation/Demodulation) M1 may transfer the order data of the consumable item receiving from the CPU 16, acting as a communication control section, toward the communication circuit 30.

The consumable item supplying section 80 may be provided with a PC (personal computer) 82 and a MODEM M2, may have a service person deliver consumable items to a user based on order data, and may automatically transmit data of scheduled delivery to the user. The PC 82 may be a consumable item supplying section host computer, and may give the service person delivery instructions specifying a type and size of the consumable items and user code when receiving the order data of the consumable items. Further, it may transmit the delivery data to the MODEM 2, which may transmit the delivery data from the consumable item supplying section 80 to the communication circuit 30. The communication circuit 30 may utilize either a private use line or a public circuit network including a wireless circuit, such as a PHS (Personal Phone System).

Since the consumable item keeping apparatus 10 may be a private use apparatus, it can be applied regardless of a model and a manufacturer to an image forming apparatus, such as a copier, a facsimile, a printer and a duplicator, of a user.

An example of contents of order data used in the consumable item keeping apparatus 10 when monitoring both inventory status data and order/delivery data is illustrated in Fig. 3. The data may include day and time when order data is transmitted, user code as user information monitored by the CPU 16, information of a consumable item type also monitored by the CPU 16, size information of consumable items sent from the size detecting sensors S3 and S4, and information of an ordering amount of the consumable item.

Delivery data transmitted from the consumable item supplying section 80 are illustrated in Fig. 4. The data may include consumable item distribution day and time when distribution of consumable item to a user is commenced and delivery data indicating information of scheduled delivery date to a user.

5 A procedure for dealing consumable item order data is now described referring to Fig. 2. Firstly, when inventory decreases from its initial condition as shown in step S10 and reaches the replenishment level, a consumable item-replenishment signal may be generated and transmitted by the consumable item replenishment level detecting sensor S1 to the CPU 16. The CPU 16 may then transmit consumable item order data to the consumable item
10 supplying section 80 via the communication circuit 30, when the consumable item replenishment signal has been continuously sensed more than a prescribed time period set by a user (i.e., Yes in step S12).

If it is less than the time period (i.e., No in step S12), the order data may be reset in step S13 because it is recognized that the signal is erroneously generated and the consumable
15 item inventory has not yet reached the replenishment level. The consumable item supplying section 80 having received the order data may deliver the applicable consumable items to the applicable user and transmit delivery data to the consumable item keeping apparatus 10 via the communication circuit 30.

The consumable item keeping apparatus 10 having received the delivery data may
20 display the delivery data on the display 14 to notify the user. Thus, the user can confirm the delivery status through the display 14 by viewing the order day, the scheduled delivery day and the distribution day, and is capable of reminding the consumable item supplying section.

Numerous modifications and variations of the present invention are possible in light
25 of the above teachings. It is therefore to be understood that within the scope of the appended claims, the present invention may be practiced otherwise than as specifically described herein.

**WHAT IS CLAIMED AS NEW AND DESIRED TO BE SECURED BY LETTERS
PATENT OF THE UNITED STATES IS:**

1. A consumable item keeping system comprising:
a consumable item keeping apparatus configured to store a variety of consumable
5 items at a user side;
a consumable item supplying section configured to supply a variety of consumable
items to a user upon request, said consumable item supplying section being connected to the
consumable item keeping apparatus via a communication circuit;
a consumable item replenishment level setting device configured to set a consumable
10 item replenishment level for the consumable item keeping apparatus;
a consumable item replenishment signal generating device configured to generate a
signal indicative of arrival of the consumable items at the consumable item replenishment
level; and
a consumable item order data transmitting device configured to transmit order data
15 indicating a request for consumable items to be replenished to the consumable item supplying
section via the communication circuit, when the consumable item replenishment signal is
generated.
2. A consumable item keeping system as claimed in claim 1, wherein said
consumable item replenishment level can be set by a user.
- 20 3. A consumable item keeping system as claimed in claim 1, wherein a kind of said
consumable items arriving at the consumable item replenishment level is detected and
corresponding data included in the order data.
- 25 4. A consumable item keeping system as claimed in any one of claims 1, 2 and 3,
wherein said order data is transmitted only when said signal is continuously sensed for a
prescribed time period.
5. A consumable item keeping system as claimed in claim 4, said prescribed time

period can be set by a user.

6. A consumable item keeping system as claimed in any one of claims 1, 2 and 3, further comprising:

5 a data receiving device configured to receive the order data transmitted from the order data transmitting device; and

a determining device configured to determine at least a kind and an amount of consumable items to be delivered from the consumable item supplying section to a user according to the order data.

10 7. A consumable item keeping system as claimed in any one of claims 1, 2, and 3, further comprising:

a delivery data transmitting device configured to transmit delivery data of the consumable items from the consumable item supplying section.

15 8. A consumable item keeping system as claimed in claim 7, wherein said delivery data includes information of both a day when consumable item distribution is commenced by the consumable item supplying section and a day when consumable items are schedule to be delivered to the user.

20 9. A consumable item keeping system as claimed in any one of claims 1, 2 and 3, wherein said consumable item is used in an image forming apparatus installed in the user side.

10. A consumable item keeping system as claimed in any one of claims 1, 2, and 3, wherein said communication device includes a wireless system.

25 11. A consumable item keeping system as claimed in any one of claims 1, 2, and 3, wherein said inventory detecting device is employable regardless of a model and manufacturer of the image forming apparatus.

12. A consumable item keeping system as claimed in any one of claims 1, 2 and 3, wherein said order data is reset when said signal disappears before a prescribed time period has elapsed.

13. A consumable item keeping system as claimed in any one of claims 1, 2, 3 and 4, wherein said consumable item data transmitting device is disposed at a used side.

14. A consumable item keeping system as claimed in any one of claims 1, 2, and 3, wherein said data receiving device is disposed at the consumable item supplying section.

15. A consumable item keeping system as claimed in any one of claims 3 and 4, comprising a display at the user side on which said delivery data is displayed.

16. A consumable item keeping system as claimed in any one of claims 1, 2, and 3, wherein said delivery data transmitting device is disposed at the consumable item supplying center.

17. A method for keeping consumable items, comprising the steps of:
setting a consumable item replenishment level for consumable items stored in a consumable item keeping apparatus at a user side;
generating a signal indicative of arrival of the consumable items at the consumable item replenishment level;
detecting the signal; and
transmitting order data of consumable items to be replenished to a consumable item supplying section via a communication circuit, when the signal is detected.

18. A method for keeping consumable item according to claim 17, wherein said transmitting step is executed only when the signal is continuously detected for a prescribed time period set by the user.

19. A consumable item keeping method as claimed in claim 17, further comprising a

step of:

detecting at least a kind of the consumable items stored in the consumable item keeping apparatus, when the signal is continuously detected for a prescribed time period.

5 20. A consumable item keeping method as claimed in any one of claims 17, 18 and 19, further comprising steps of:

transmitting delivery data of the consumable item to be distributed to the user side; and

displaying information of the delivery data at the user side.

10 21. A consumable item keeping system comprising:
consumable item keeping means for storing a variety of consumable items at a user side;

consumable item supplying means for supplying a variety of consumable items to a user upon request, said consumable item supplying means being connected to the consumable item keeping means via communication means;

15 consumable item replenishment level setting means for setting a consumable item replenishment level for each consumable item;

signal generating means for generating a signal indicative of arrival of the consumable items at the consumable item replenishment level;

signal detecting means for detecting the signal; and

20 consumable item order data transmitting means for transmitting order data indicating request for consumable items to be replenished to the consumable item supplying means via the communication means, when the signal detecting means detect the signal.

25 22. A consumable item keeping system as claimed in claim 21, wherein said order data is transmitted only when the signal is continuously generated and detected for a prescribed time period.

23. A consumable item keeping system as claimed in any one of claims 21 and 22, further comprising:

delivery data transmitting means for transmitting delivery data indicating a consumable item distributing day and consumable item scheduled delivery day from the consumable item supplying means to the user side, and displaying means for displaying the delivery data at the user side.

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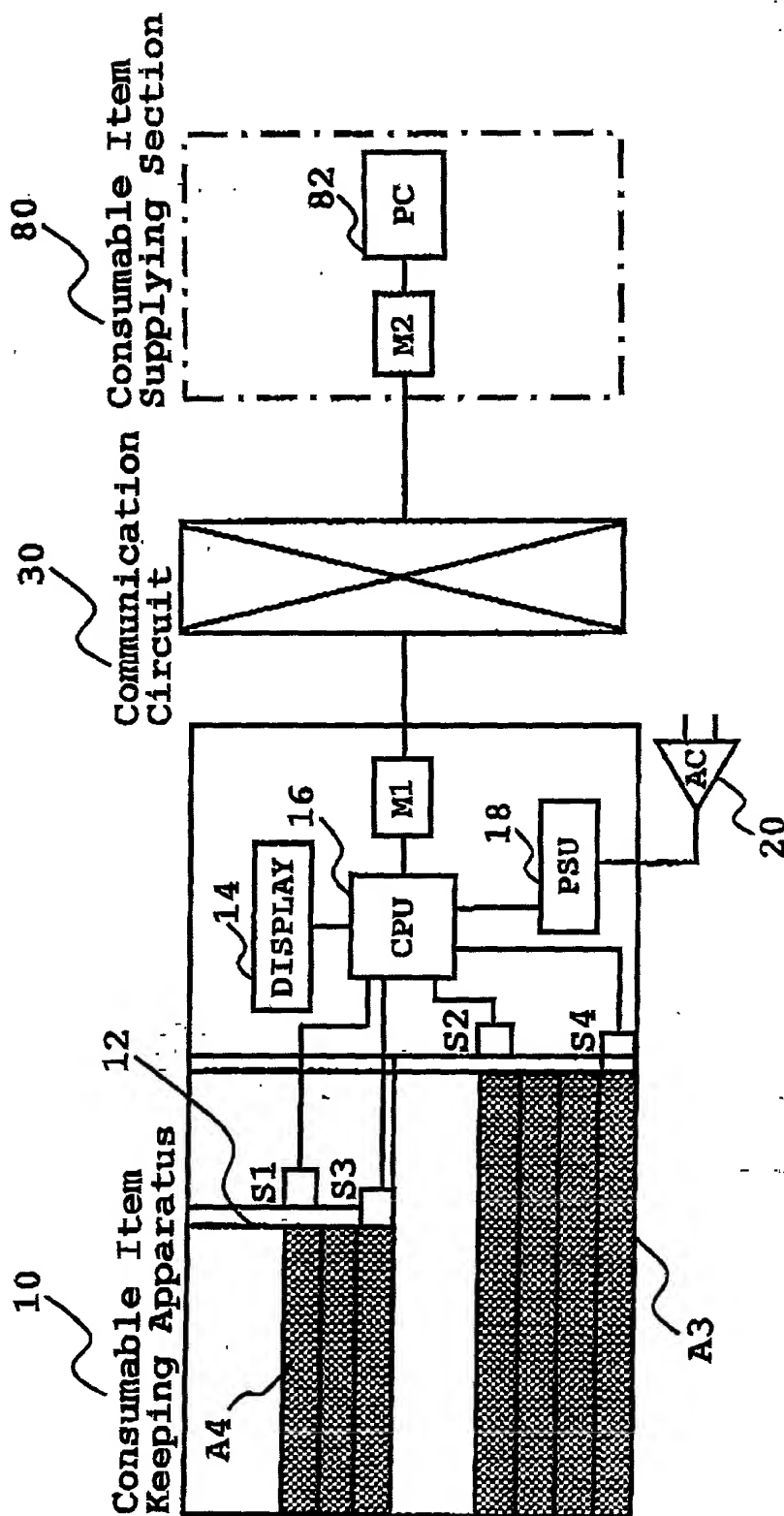
ABSTRACT OF THE DISCLOSURE

A consumable item keeping system and method wherein a consumable item keeping apparatus stores a variety of consumable items at a user side, and a consumable item
5 supplying section is connected to the consumable item keeping apparatus via a communication circuit and supplies a variety of consumable items to the user side upon request. A consumable item replenishment level setting device sets a consumable item replenishment level for consumable items stored in the consumable item keeping apparatus and a signal generating device generates a signal indicative of arrival of the consumable items
10 at the consumable item replenishment level. Further, a consumable item data transmitting device transmits order data indicating request for consumable items to be replenished to the consumable item supplying section via the communication circuit when the signal is generated in the consumable item keeping apparatus.

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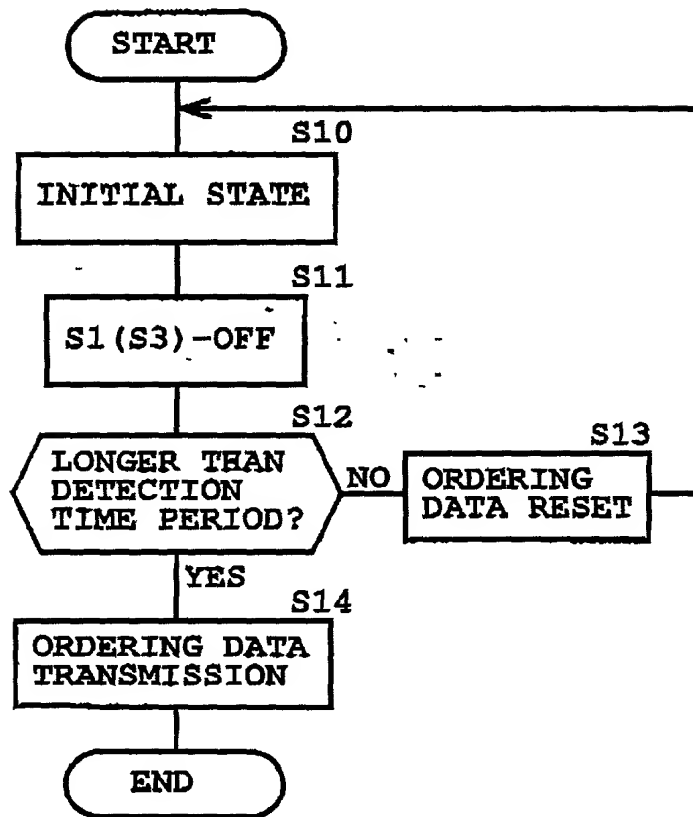
DOCKET # 017-0413-2 SHEET 1 OF 3

FIG. 1



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FIG. 2

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DOCKET # CS57-4983-2 SHEET 3 OF 3**FIG. 3**

(1) Ordering Day & Time	(2) User Code	(3) Kind of Consumable Item	(4) Size of Consumable Item	(5) Amount of Ordered Consumable Items
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FIG. 4

(1) Consumable Item Distributing Day & Time	(2) Delivery Data
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Declaration and Power of Attorney For Patent Application

特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

下記の氏名の発明者として、私は以下の通り宣言します。

As a below named inventor, I hereby declare that:

私の住所、私書箱、国籍は下記の私の氏名の後に記載された通りです。

My residence, post office address and citizenship are as stated next to my name.

下記の名称の発明に関して請求範囲に記載され、特許出願している発明内容について、私が最初かつ唯一の発明者（下記の氏名が一つの場合）もしくは最初かつ共同発明者（下記の名称が複数の場合）であると信じています。

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled.

SYSTEM AND METHOD FOR KEEPING CONSUMABLE

ITEMS IN AN IMAGE FORMING APPARATUS

上記発明の明細書は、

- ☐ 本書に添付されています。
- ☐ ____月____日に提出され、米国出願番号または特許協定条約国際出願番号を____とし、
(該当する場合) ____に訂正されました。

the specification of which

☒ is attached hereto.

☐ was filed on _____

as United States Application Number or

PCT International Application Number

_____ and was amended on

_____ (if applicable).

私は、特許請求範囲を含む上記訂正後の明細書を検討し、内容を理解していることをここに表明します。

Atty. Dkt. No. 0557-4983-2

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

私は、連邦規則法典第37編第1条56項に定義されるとおり、特許資格の有無について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

Japanese Language Declaration

(日本語宣言書)

私は、米国法典第35編119条 (a) - (d) 項又は365条 (b) 項に基づき下記の、米国外の国の少なくとも一カ国を指定している特許協力条約365 (a) 項に基づく国際出願、又は外国での特許出願もしくは発明者証の出願についての外国優先権をここに主張するとともに、優先権を主張している、本出願の前に出願された特許または発明者証の外国出願を以下に、枠内をマークすることで、示しています。

Prior Foreign Application(s)

外国での先行出願

JPAP11-204774

(Number)
(番号)

JAPAN

(Country)
(国名)(Number)
(番号)(Country)
(国名)

私は、第35編米国法典119条 (e) 項に基づいて下記の米国特許出願規定に記載された権利をここに主張いたします。

(Application No.)
(出願番号)(Filing Date)
(出願日)

私は、下記の米国法典第35編120条に基づいて下記の米国特許出願に記載された権利、又は米国を指定している特許協力条約365条 (c) に基づく権利をここに主張します。また、本出願の各請求範囲の内容が米国法典第35編112条第1項又は特許協力条約で規定された方法で先行する米国特許出願に開示されていない限り、その先行米国出願書提出日以降で本出願書の日本国内または特許協力条約国際提出日までの期間中に入手された、連邦規則法典第37編1条56項で定義された特許資格の有無に関する重要な情報について開示義務があることを認識しています。

(Application No.)
(出願番号)(Filing Date)
(出願日)(Application No.)
(出願番号)(Filing Date)
(出願日)

私は、私自信の知識に基づいて本宣言書中で私が行なう表明が真実であり、かつ私の入手した情報と私の信じているところに基づく表明が全て真実であると信じていること、さらに故意になされた虚偽の表明及びそれと同等の行為は米国法典第18編第1001条に基づき、罰金または拘禁、もしくはその両方により処罰されること、そしてそのような故意による虚偽の声明を行なえば、出願した、又は既に許可された特許の有効性が失われることを認識し、よってここに上記のごとく宣誓を致します。

I hereby claim foreign priority under Title 35, United States Code Section 119 (a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Claimed
優先権主張

19 / JULY / 1999

(Day/Month/Year Filed)
(出願年月日)☒Yes
はい☐No
いいえ(Day/Month/Year Filed)
(出願年月日)☐Yes
はい☐No
いいえ

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below.

(Application No.)
(出願番号)(Filing Date)
(出願日)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code Section 112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of application.

(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)(Status: Patented, Pending, Abandoned)
(現況: 特許許可済、係属中、放棄済)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Japanese Language Declaration
(日本語宣言書)

委任状：私は下記の発明者として、本出願に関する一切の手続きを米特許商標局に対して遂行する弁理士または代理人として、下記の者を指名いたします。
(弁理士、または代理人の指名及び登録番号を明記のこと)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: (list name and registration number)

Norman F. Oblon, Registration Number 24,618; Marvin J. Spivak, Registration Number 24,913; C. Irvin McClelland, Registration Number 21,124; Gregory J. Maier, Registration Number 25,599; Arthur I. Neustadt, Registration Number 24,854; Richard D. Kelly, Registration Number 27,757; James D. Hamilton, Registration Number 28,421; Eckhard H. Kuesters, Registration Number 28,870; Robert T. Pous, Registration Number 29,099; Charles L. Gholz, Registration Number 26,395; Vincent J. Sunderdick, Registration Number 29,004; William E. Beaumont, Registration Number 30,998; Steven B. Kelber, Registration Number 30,073; Robert F. Gnuse, Registration Number 27,295; Jean-Paul Lavalleye, Registration Number 31,451; Stephen G. Baxter, Registration Number 32,884; Martin M. Zollick, Registration Number 35,745; Robert W. Hahl, Registration Number 33,893; Richard L. Treanor, Registration Number 36,379; Steven P. Weihrouch, Registration Number 32,829; John T. Goolkasian, Registration Number 26,142; Marc R. Labgold, Registration Number 34,651; William J. Healey, Registration Number 36,160; Richard L. Chinn, Registration Number 34,305; Steven E. Lipman, Registration Number 30,011; Carl E. Schlier, Registration Number 34,426; James J. Kulbaski, Registration Number 34,648; Catherine B. Richardson, Registration Number 39,007; Richard A. Neifeld, Registration Number 35,299; and J. Derek Mason, Registration Number 35,270; with full powers of substitution and revocation.

書類送付先

Send Correspondence to:

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
FOURTH FLOOR
1755 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VIRGINIA 22202 U.S.A.

直接電話連絡先：(名前及び電話番号)

Direct Telephone Calls to: (name and telephone number)
(703) 413-3000

唯一または第一発明者名	Full name of sole or first inventor Takafumi HOSHIZAWA
発明者の署名	Inventor's signature Takafumi Hoshizawa
日付	Date June 14, 2000
住所	Residence Yokohama-shi, Japan
国籍	Citizenship Japan
私書箱	Post Office Address 2005 Totsuka-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken Japan
第二共同発明者	Full name of second joint inventor, if any Shunichi AKABANE
第二共同発明者の署名	Second inventor's signature Shunichi Akabane
日付	Date June 14, 2000
住所	Residence Misato-shi, Japan
国籍	Citizenship Japan
私書箱	Post Office Address 511 Ushiroya, Misato-shi, Saitama-ken, Japan

(第三以降の共同発明者についても同様に記載し、署名すること)

(Supply similar information and signature for third and subsequent joint inventors.)

Japanese Language Declaration (日本語宣言書)

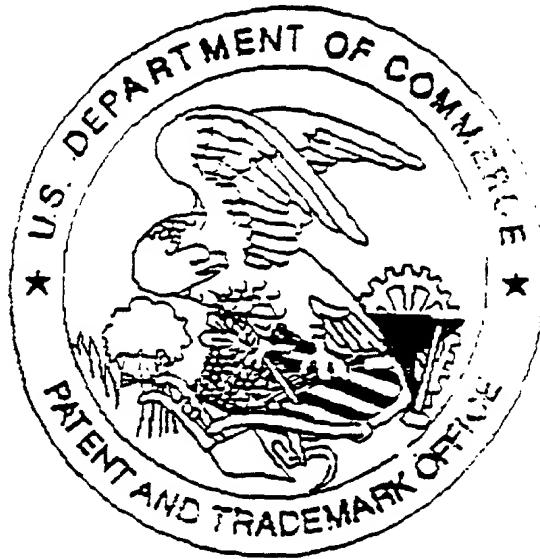
第三の共同発明者の氏名	Full name of third joint inventor, if any Tadashi YAMAZAKI	
第三の共同発明者の署名	日付	Third joint Inventor's signature Tadashi yamazaki
住所		Date '00.6.14
国籍		Residence Yokohama-shi, Japan
郵便の宛先		Citizenship Japan
		Post Office Address 1555 Kasama-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, Japan

第四の共同発明者の氏名	Full name of fourth joint inventor, if any	
第四の共同発明者の署名	日付	Fourth joint Inventor's signature
住所		Date
国籍		Residence
郵便の宛先		Citizenship
		Post Office Address

第五の共同発明者の氏名	Full name of fifth joint inventor, if any	
第五の共同発明者の署名	日付	Fifth joint Inventor's signature
住所		Date
国籍		Residence
郵便の宛先		Citizenship
		Post Office Address

第六の共同発明者の氏名	Full name of sixth joint inventor, if any	
第六の共同発明者の署名	日付	Sixth joint Inventor's signature
住所		Date
国籍		Residence
郵便の宛先		Citizenship
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